VC participation and IPO earnings management: Evidence from China

Hamish Anderson, Jing Chi, Qing (Sophie) Wang[*]

Abstract: In this paper, we empirically examine the effects of VC backing, VC reputation, and government VC backing on earnings management of IPOs in China. While developed market evidence highlights that VCs and especially reputable VCs, constrain opportunistic earnings management of IPO issuers, we do not find VCs or reputable VCs improve the information quality of VC-backed IPOs in China. Instead, we show that government VCs are likely to encourage opportunistic earnings management of their portfolio firms. We also provide evidence that the higher earnings management associated with government VC backing partially explains poorer post-IPO operating performance, and that reputable VCs have some monitoring effect on long-run operating performance of IPO issuers.

---

[*] Corresponding author. Email address: Q.wang1@massey.ac.nz (Q.S. Wang)

1. Introduction

This study examines the effects of venture capital (VC) backing, VC reputation, and government VC backing on earnings management of initial public offerings (IPOs) in China. China's VC industry has grown rapidly since the late 1990s. In terms of the value of deals, China's VC market has now become the third largest according to the global VC rankings, following the U.S. and Europe (Ernst and Young, 2014). China has seen an increasing number of VC-backed IPOs since the introduction of the SME and venture boards[1]. In 2011, for example, VC-backed IPOs represent 51 percent (142 IPOs) of all the new listings (281 IPOs) in Chinese stock markets, raising total capital of US$23 billion. In terms of industry breadth, the industry distribution of VC-backed IPOs in China is broader with a higher concentration in high-tech and consumer services sector than other emerging markets (Ernst and Young, 2014). Given the significant presence of venture capital firms (VCs) in Chinese IPO market, we are motivated to examine whether VCs affect financial reporting and disclosure choices of IPO issuers. Investigating in this transitional market can provide additional insights into the understanding of VC mechanisms, especially in environments outside the US market.

Despite extensive literature and anecdotal evidence regarding VC-added value in developed markets, little is known empirically about whether VCs improve information quality of their portfolio firms in a transitional and emerging market. A general consensus among academics and practitioners is that VC activities are practiced in a markedly different way within China as opposed to the US (Burton and Ahlstrom, 2003; Tan, Huang, Lu, 2013). Such behavioral divide can be attributed to significant institutional differences between China and developed markets (Bruton and Ahlstrom, 2003; Lu, Huang and Tan, 2012; Wright, Lockett, and Pruthi, 2002). For example, the weak investor protection enforcement and poor corporate governance in emerging markets may reduce VC firms' incentives to act in the interests of investors. In addition, the rent-seeking nature of VCs (Lu et al., 2012) may motivate opportunistic behavior among VC firms. To capture the huge economic rents in Chinese IPO market[2], VCs may have strong incentives to 'window dress' the accounting

---

[1] The SME Board is a component of the main board of the Shenzhen Stock Exchange (SZSE), and issuers must comply with the same set of laws, regulations, and listing requirements as the main board issuers. The venture board (also called the "ChiNext Board") established in 2009 is a NASDAQ-type market in China and the listing rules for the venture board are less stringent.

[2] The administratively controlled IPO process and strong investor demand for new issues have resulted in an abnormally high IPO offering price and high secondary market price in Chinese stock markets (Mok and Hui,

statements of their portfolio firms. On the other hand, rejection by the China Security Regulatory Commission (CSRC) for IPO listings or negative media reports would lead to significant economic and reputation loss.

An important characteristic of Chinese markets is the heavy government involvement in both the VC and IPO markets. In China, the government acts as both the regulator and economic player in its capital markets. On one hand, China keeps its IPO process under strict administrative control. For firms to be listed on the Chinese stock exchange, approval from the CSRC, a state controlled regulatory institution, is required. On the other hand, governments, especially local governments, act as venture capitalists themselves in its VC market. The mixed identity as managers and government officials may lead to a strong tendency for government VCs to utilize their political ties with other regulators to exit their investments. Since managers are often evaluated based on the performance of firms managed by them, they may have strong incentives to manage earnings and boost performance of their VC firms.

Our study contributes to the existing literature in the following ways. First, we are among the few studies that examine the role of VCs in affecting earnings management of IPO issuers in a transitional and emerging economy. We argue that it is important to examine how the institutional environments change the governance roles of VCs in the context of potential manipulation of information provided to the outside investors. Second, we extend the western literature regarding VC reputation in improving information quality by examining the trade-off between VC's opportunistic behavior and their reputational considerations towards earnings management. Lastly, to the best of our knowledge, we are the first study examining the role of government VCs in affecting earnings management of IPO issuers in a transitional economy. This question is significant given the extensive government involvement in VC development in China. As such, investors and entrepreneurs would like to know whether government VC participation generates positive outcomes in terms of improving information quality of privately-held SMEs.

Using a sample of 1053 IPOs listed on the SME and venture boards during 2004-2012, we find that VC-backed IPOs engage in upward earnings management to a similar extent as non-VC-backed IPOs, suggesting that VCs in general do not improve information quality of their portfolio firms. In addition, reputable VCs do not significantly constrain opportunistic behavior of IPO issuers. However, we find that government VC-backed IPOs exhibit more

---

1998; Gao, 2010). The launch of the SME Board in 2004 and the long-awaited venture board (ChiNext) in 2009 make it possible for domestic VCs to join this IPO wealth creation campaign (Lu et al., 2012).

income-increasing earnings management than other IPO issuers. This result is robust to various earnings management (e.g. cross-sectional modified Jones and performance matched abnormal accruals) and the endogenous choice of government VC backing. We further show that earnings management associated with government VC-backed IPOs leads to poor operating performance in the long run, but it has little impact on post-IPO stock-returns. We also show some monitoring effect of reputable VCs in the post-issue operating performance of their IPOs.

The rest of the paper is organized as follows. Section 2 provides hypothesis and related literature. Section 3 describes the data sample, variables and methodology used in the paper. Section 4 presents the empirical results. Robustness tests are shown in Section 5. The role of earnings management and government VCs on post-IPO performance is explored in Section 6, and in Section 7 we conclude the paper.

2. Institutional background and hypotheses development

2.1 Institutional background

Driven primarily by the US success in utilizing VC to encourage innovation and growth, the Chinese government started to promote VC to fill the SME finance gap in the mid-1980s. China's VC industry experienced slow development in its first ten years, with central and local government VC firms being major players. The first breakthrough did not occur until late 1990s when private capital was allowed to invest in venture capital funds. In 1996, individuals, large corporations, and universities, which were prohibited from investing in VC funds, were allowed to enter the VC industry. In 2001, foreign VCs gained legitimacy to invest in China. In addition, the right to private property was recognized for the first time by the government and constitutionalized in 2004, which demonstrates the Chinese government's commitment in encouraging and supporting the non-public sector of the economy. Lastly, the introduction of the SME Board in 2004 and the ChiNext board in 2009 has significantly enriched the exit channels for VC investments. These institutional changes, together with the strong growth of China's economy, have attracted a wave of funds into its VC industry (Guo and Jiang, 2013).

In the West, VC firms are often considered as not only capital providers, but also active institutional investors which mitigate information asymmetries and add value to their

portfolio firms (e.g., Hellman and Puri, 2002; Hochberg, 2005). However, academics and practitioners generally agree that VC activities are practiced in a markedly different way within China due to significant institutional differences between China and developed economies (Burton and Ahlstrom, 2003; Tan, et al., 2013; Lu, et al., 2012). Despite the continued effort of the government in developing its market and legal systems, China's formal institutions (i.e. laws, rules, regulatory and enforcement regime) are still largely underdeveloped (Bruton and Ahlstron, 2006; Luo, 2007). For example, although China's accounting rules and reporting standards has improved significantly during the last decade, the accounting information on earnings may still not be reliable, especially for private firms (Noronha et al., 2008). Thus early-stage investments are more risky for VC firms in China as compared to in developed economies (e.g., Bruton and Ahlstrom, 2003). In addition, due to weak investor protection and enforcement in laws and regulations, VCs in China have a strong investment preference towards late-stage deals and conventional sectors (Ernst and Young, 2014). As such, VCs' traditional practices of careful screening, due diligence, and monitoring may be less important (Lu, et al., 2012).

Another prominent feature of Chinese VC market is the prevalence of government involvement in its VC development. The Chinese government influences the VC industry by establishing investment agencies and funds and tackling the capital gap through providing incentives to private sector VC funds. The majority of domestic VCs in China are mainly established as state-owned subsidiaries, or spin-offs of local governments, large corporations, and public universities (Guo and Jiang, 2013). Most of them are still structured as limited liability companies, as limited partnership was not legal in China as an organizational form until June 2007. Limited companies are managed under a functional divisional structure, with all investment decisions made by top managers based on information reported by investment managers. These managers and investment professionals do not claim residual revenues and are normally compensated with fixed salaries plus bonuses which are often determined by company-wide performance (Guo, 2008; Guo and Jiang, 2013). Most executive managers of government VCs are former government officers or SOE managers who are typically appointed by government bureaus or their parent corporations. They often do not have venture capital financing expertise when they join the VC firms.

Among government VCs, local government VCs are one of the major and direct players in regional markets. For example, Shenzhen Capital Group (SCGC), a dominant municipal government-controlled VC firm, was ranked as No.1 venture capital in China by Forbes magazine for 2011, 2012, and 2013, with total investment amount of RMB 14.9 billion. It

listed more than 30 portfolio firms in the domestic A-share markets and 33 in other stock markets. Another example is Govtor Capital, an active government-owned VC firm in Jiangsu province, managing capital of more than RMB30 billion. It has invested in more than 500 entrepreneurial firms, with 51 successfully exited through IPOs. Although initially dependent on local governments for capital, regulatory changes allow local government VCs to gradually diversify their sources of funding. The majority of local government VC firms are now increasingly counting on listed and cash-rich enterprises to keep up their investment capacity (White, Gao, and Zhang, 2004). In addition, since 2007 local governments of several Chinese coastal cities have initiated guiding funds to increase the participation of institutional and individual investors, and local government VCs are typically invited to manage these funds. To be promoted as high ranking officials, managers of local government VCs are often evaluated based on firm performance rather than services they provide as government officials (Noronha et al., 2008).

In addition to VC market, the Chinese government exerts strictly administrative control over the IPO process in its capital market. To list on the domestic stock exchanges, companies need approval from the CSRC, an authority of the Chinese government. Although the Chinese government has promulgated a number of laws and regulations to guide the IPO selection process, the legislation contains large amount of soft, qualitative, and ambiguous requirements (Yang, 2013). For example, Decree 30 of CSRC (2006) states that "an issuer shall not have any major debt-paying debt or involve with any contingent issue such as guaranty, litigation, and arbitration that may negatively affect its business operations". The purpose of these criteria is to provide flexibility for CSRC officials and the Stock Issuance Examination and Verification Committee (SIEVC) members to select better-performing firms with high growth potential. However, these requirements also give the government officials a great amount of discretion in their decision making which creates room for political ties[3] to play a role in the IPO selection process (Yang, 2013; Liu, Tang, and Tian, 2013).

2.2 Hypotheses development

2.2.1 VC backing and earnings management

The evidence on the role of VC backing on earnings management is limited and mixed. On one hand, several studies support the prediction that active monitoring role of VC firms

---

[3] China's administrative bureaucratic system is often characterised by its inter-personal network and clientelism (Wu, 2007).

constrains opportunistic earnings management of IPO issuers (e.g., Hochberg, 2005; Morsfield and Tan, 2006; Katz, 2009; Cornett, Marcus, Saunders, and Tehranian, 2006). On the other hand, some studies document greater earnings management by VC-backed firms than by non-VC-backed firms. For example, Gompers (1996) argues that young VC firms have strong incentives to push their portfolio firms to go public prematurely, in order to build successful track records before going back to fundraise for a new limited partnership (Lee and Wahal, 2004). Stross (2000) and Healy (2002) suggest that the interests of VCs may conflict with other pre- or post- IPO investors around the time of offering and that VCs may use their influence over management to artificially inflate IPO price.

Prior studies in China generally find IPO issuers engaging in opportunistic income increasing earning management (e.g., Aharony, Lee, and Wong, 2000; Kao, Wu, and Yang, 2009; Liu, Uchida, and Gao, 2012). To the best of our knowledge, no study investigates the impact of VCs on earning management of IPO issuers, presumably due to the historically limited involvement of VCs in its IPO markets. Since the establishment of the SME and venture boards, there has been a significant increase in the number of VC-backed IPOs. Due to the complex IPO regulations and the requirement of the CSRC's approval for listing on Chinese stock exchanges, the majority of VC-backed IPOs are backed by domestic VCs which have more local connections than their foreign counterparties[4] (Humphery-Jenner and Suchard, 2013). However, as compared with foreign VCs, domestic VCs in China are less risk tolerant with relatively inadequate capabilities and experience in assisting young and innovative firms (Zhang, 2012). In fact, most domestic VCs are quite young and still in the stage of developing formal internal structures and processes for each stage of VC investment process (Zhang, Gao, White, and Vega, 2008). They may not have adequate experience or resources in adding significant value to their portfolio firms.

Furthermore, the favorable exit routes and the rent-seeking nature of domestic VCs in China have led to a greater number of investments in late-stage deals and conventional sectors (Lu et al., 2012). Tan et al. (2013) show that domestic VCs have strong incentives to free ride on the IPO opportunities. They argue that the reasons that Chinese entrepreneurs are willing to give up partial ownership even though VCs are only free riders, are to strengthen their financial positions and obtain connections with the listing approval authority to get

---

[4] In China, domestic VCs are less likely to invest in high-tech sectors as opposed to foreign VCs, presumably due to their lack of experience and competitive advantages in investing in high-tech sectors (Zhang, 2012). However, foreign VCs in China prefer to exit their investments in foreign stock markets (including Hong Kong Stock exchanges), since they are better connected with key intermediaries, more experienced and knowledgeable than are domestic VCs about developed markets (e.g. Humphery-Jenner and Suchard, 2013; Tan et al., 2013).

listed faster and easier. As the investment duration of many domestic VCs are generally not long[5], it is less likely that they could significantly improve the corporate governance of their portfolio firms. Lastly, VCs in China have greater pressure to gather new funding that depends on exhibiting returns on prior investments (Zhang et al., 2008). To achieve high returns, VCs may be more likely to manage earnings of their portfolio firms to get their portfolio firms listed on the stock exchanges. However, since all the IPO candidates are strictly audited by the CSRC, VCs may also not take the risks of managing earnings severely and lose the opportunity of listing on the Chinese markets. Given the foregoing discussion, we put forward our first hypothesis:

H1. VC-backed IPOs are more likely to engage in upward earnings management than non-VC-backed IPOs.

2.2.2 VC reputation and earnings management

In contrast to VCs with few successful records, established VCs with significant reputation capital bear much greater risks of loss if they encourage or at least choose not to discourage earnings management by their portfolio firms (Lee and Masulis, 2011). For example, reputable VCs generally have long-term relationships with other industry participants and their relationships are valuable in bringing portfolio firms into the market quickly and being successful in completing proposed IPOs (Krishnan et al., 2011). However, these relationships would be damaged if their portfolio firms substantially underperform the market as a result of severe earnings management. In addition, unsuccessful IPO backing will bring negative effects on VCs' future fundraising efforts and their ability to take firms public in the future. Lee and Masulis (2011) differentiate across VC investors by reputation and find that more reputable VCs are associated with IPO issuers exhibiting less earnings management in the U.S. market.

Compared with developed markets, the information asymmetries between VCs and private SMEs are more severe as China is a transitional market with less developed disclosure rules. Although China's accounting standards have improved significantly, the road towards

---

[5] The median time from initial VC financing to IPO exit (in years) are significantly lower in China as compared to that in the U.S. and Europe. For example, according to Global Venture Capital Insights and Trends (Ernst & Young, 2014), the median time to IPO exit is 2.4 years in China in 2012, as compared to 7.3 years in U.S. and 6.2 years in the Europe. In our sample, the average time to IPO exit is about 2.8 years, with government VCs (3.4 years) have longer time to exit than private VCs (2.53 years).

well-regulated financial reporting is still long and winding, especially for non-listed SMEs (Noronha et al., 2008). As most private SMEs are family-owned and run informally, they do not have checks and balances and their financial reporting are usually not be transparent (World Bank, 2005). Reputable VCs may be more able to select high-quality firms than other VCs, and thus they may have fewer incentives to manipulate the earnings of their portfolio firms. In addition, the poor after-market performance of their portfolio firms and negative media reports can damage their reputation and affect their ability to raise new capital. Therefore, we introduce our second hypothesis:

H2. Reputable VC-backed IPOs engage in less upward earnings management than do other IPO issuers.

2.2.3 Government VC backing and earnings management

Lerner (1999, 2002) suggests that government funds ought to complement, and not compete with private VC investments. Prior studies find both crowding-out (a reduction in the aggregate pool of VC capital) and seeding effects (greater amount of money to be invested in the industry) regarding the role of government intervention on the development of VC industries as a whole (e.g., Lerner, 1999; Leleux and Surlemont; 2003; Cumming and MacIntosh, 2006). However, literature on the performance of government VCs generally documents that government VCs significantly underperform private VCs (e.g., Brander, Egan, and Hellmann, 2008; Florida, Donald, and Smith, 1993).

China's VC industry was established in mid-1980s, with the central and local governments taking the lead and acting as the venture capitalists themselves by investing in high-risk and innovative projects. Though government investment has played a significant role in promoting its VC development (Kenney, Han, and Tanaka, 2004), the issue of Chinese governments acting as venture capitalists has stoked heated debate (China Business Review, 2009). With the rapid development of China's VC market, government VC firms are facing increasingly fierce competition and challenges. First, the incentives facing government VCs in mitigating informational problems might well be distorted, as such VCs are usually burdened with a variety of additional features or conditions that may seek to promote other public or political objectives and thus have significant economic costs (Brander et al., 2008). For example, government VCs are often susceptible to government pressure to support innovative start-ups whose risk and return prospects are not attractive (Zhang, et al., 2008).

Second, the government's interests may differ from those of the portfolio firm and its shareholders, and thus strategies promoted by government VCs may be optimal from the government's point of view, but suboptimal from the portfolio firm's (Okhmatovskiy, 2010). Consequently, the involvement of government VC backing may be associated with significant costs for the portfolio firm. Lastly but not the least, managers of many government VCs are also government officials who may not have professional expertise in selecting and assisting entrepreneurial firms. Given the importance of government's IPO screening process for prospective IPO firms, managers are likely to utilize their political ties with other regulators and manipulate earnings of their portfolio firms to realise returns and attract more future capital.

Among government VCs, we argue that local government VCs may have stronger incentives to manage earnings for the following two reasons. First, to be promoted as high ranking officials, managers of local government VCs are often appraised by firm performance which is reflected by measures such as rate of return and growth rate, rather than in terms of standard sets of services provided as civil servant (Noronha, et al., 2008). To achieve high returns, they are likely to manipulate the accounting information of their portfolio firms and to capture the huge rents in Chinese IPO markets. Second, local government are now relying heavily on listed enterprises and private investors for capital (White, et al., 2008). However, market investors are often burdened with relatively uncertain income, higher risks, and longer payback periods of investing in high-tech firms (Chen, 2010). In addition, market investors are motivated more by profit maximization than public policy or political objectives. The conflicts between the local government and market investors may lead to additional principle-agent conflicts and upward earnings management in IPO firms (Chahine, Arthurs, Filatotchev, and Hoskisson, 2012). Under the pressure of attracting public and private capital and boosting returns for their own promotion purpose, managers of local government VCs are likely to utilize their special relationships to manage earnings.

The foregoing arguments lead to our following hypotheses:

H3. IPO firms backed by government VCs engage in greater upward earnings management than do other IPO issuers.

H3a. Local government VC-backed IPOs engage in upward earnings management to a greater extent than do other IPO issuers.

3. Data, Variables, and Methodology

3.1 Data sources and sample distribution

Our sample consists of all IPOs listed on the SME and venture boards in Shenzhen Stock Exchange (SZSE) from 2004 to 2012. Issuers on the main boards of the Shanghai Stock Exchange and SZSE are excluded as they are mostly large state-owned firms. The relevant data is extracted from the Wind database, the China Stock Market and Accounting Research (CSMAR) database, and hand-collected from IPO prospectuses. Specifically, we obtain the year of the IPO, issuing amounts, underwriter and auditor information, and pre-IPO financial data from the Wind database. Post-IPO trading price and financial data are taken from the CSMAR. Three financial service (CSRC industry code I) issuers are excluded since their financial disclose requirements and performances are significant different from other issuers. After deleting these three observations, we obtain a final sample of 1053 issuers from 2004 to 2012. Since there is no authorized database for VC investors in China, we hand-collect the characteristics of VC firms from IPO prospectus.

Our hand collected data includes 1053 sample companies, in whose shareholders are 379 VC firms[6]. We first collect shareholders' names that contain key words such as "venture", "investment", "VC investment", "limited partnership", and so on. Then we exclude so-called "venture" institutions that are owned by the controlling shareholder or top managers as many of them are established to execute stock incentives schemes to the staff (Zhang and Li, 2011). To sum up, we identify a shareholder as a VC firm if the institution mainly engages in equity investment and does not have any relationship with controlling shareholders or top managers. At last, 449 IPOs are identified as VC-backed firms.

Following Krishnan, Ivanov, Masulis, and Singh (2011), we measure VC reputation by using VCs' prior market share of VC-backed IPOs. They demonstrate that the prior market share of VC-backed IPOs is a robust reputation measure with attractive properties. If a VC's prior market share of VC-backed IPOs in the past three years ranks in the top 25% in the VC market the year prior to an IPO, it is identified as a "more reputable VC"[7]. When there is

---

[6] In this study, we use a broad definition of VC and do not distinguish among venture capital or private equity. Since the private equity industry is relatively young, the Chinese PE mainly belongs to the growth capital. Entrepreneurial growth firms may include sectors other than those in high-tech sector. In addition, the release of bureaucratic constraints on firms through privatization and liberation may lead to the emergence of established corporations that have growth potential and need investment capital to help realize that growth (Wright, 2007).
[7] We also use Nahata (2008)'s cumulative IPO market share as an alternative measure for VC reputation and find that our main results remain unchanged.

more than one VC investor, we follow existing literature and use the reputation of the lead VC investor, defined as the VC having the largest total investment in a portfolio firm. Of the 449 VC-backed IPOs, 110 are backed by more reputable VCs. We define a VC firm as a government VC if its largest controlling shareholder is either central or local government, or state-owned enterprises (SOEs). Among the 449 VC-backed IPOs, 125 are identified as government VC-backed, of which 10 are central government VC-backed, 79 are local government VC-backed, and 36 are SOE VC-backed IPOs.

Table 1 presents the sample distribution. Panel A shows the frequency distribution of IPOs by year. During the sample years, IPO markets are more active in later sample periods starting from 2010 due to the launch of the venture board. In year 2009 and 2012, the frequency of VC-backed IPOs exceeds that of non-VC-backed IPOs. Panel B presents the industry distribution of our sample firms. Manufacturing firms account for a substantial part (approximately 73%) of the sample firms. VC-backed IPOs are highly concentrated in the manufacturing and IT sectors.

Panel C of Table 1 reports IPO issuer characteristics. We conduct univariate tests to compare the characteristics of IPOs with and without VC financing, with government and private VC backing, and with reputable and non-reputable VC backing, respectively. Consistent with developed market evidence (Lee and Wahal, 2004), VC-backed IPO issuers are associated with more reputable lead investment banks. Both average offer price and gross proceeds are significant higher for VC-backed IPOs. VC-backed and reputable VC-backed IPOs exhibit lower underpricing, lower leverage, and higher pre-IPO returns on assets (ROA) than non-VC-backed and non-reputable VC-backed firms, respectively. VCs are less likely to invest in government-controlled firms or firms with a higher degree of ownership concentration. We also find that government VC-backed issuers tend to be younger, have higher initial returns and lower pre-IPO returns on assets (ROA) as compared to private VC-backed issuers.

Panel D of Table 1 presents VC characteristics. It shows that 27.8% of VC-backed IPOs are government VC-backed, within which 17.4% are local government VC-backed. Central government VC-backed IPOs consist of only 2.2% of VC-backed IPOs. The average proportion of shares held by VCs before IPO is around 10% and the median investment duration of VC firms is around 2.4 years.

[Insert Table 1 about here]

11

3.2 Measurement of earnings management

Prior earnings management studies focus on accounting accruals as the difference between reported earnings and cash flow from operations. Accruals include non-discretionary accruals which are determined by firms' economic fundamentals, and discretionary accruals that are unrelated to fundamental factors. Following the extant literature (e.g. Chahine, et al., 2012; Lee and Masulis, 2011; Teoh, et al., 1998a, b), we use the discretionary accruals obtained from a cross-sectional modified Jones (1991) model as our first measure for earnings management. Similar to Hribar and Collins (2002) and Liu and Lu (2007), we first measure total accruals (TAC) using a cash flow approach:

$$TAC_t = NI_t - OCF_t \tag{1}$$

Then we use the cross-sectional modified Jones (1991) model, where TAC_t is regressed on gross fixed assets, change in sales revenue, and change in net receivables in a cross-sectional regression. Specifically, we take the residual term from estimating the following regression:

$$TAC_t / TA_{t-1} = \alpha_0 / TA_{t-1} + \alpha_1 PPE_t / TA_{t-1} + \alpha_2 (\Delta REV_t - \Delta AR_t) / TA_{t-1} + \varepsilon_t \tag{2}$$

where TA_{t-1} is the total assets in year t-1; PPE_t is gross property, plant and equipment at the end of year t; ΔREV_t is revenues in year t less revenues in year t-1; ΔAR_t is net receivables in year t less net receivables in year t-1; $\alpha_0, \alpha_1,$ and α_2 are industry and year specific parameters. To reduce heteroskedasticity, all variables in the regression are deflated by the beginning balance of the year's total assets.

Equation (2) is estimated first by taking the data from all firms listed on the Chinese A-share markets matched on year and industry[8], but excluding the issuer and other IPO firms. Consistent with Chahine et al. (2012), we require each IPO firm have at least 10 industry-matched firms. We obtain $\alpha_0, \alpha_1,$ and α_2 in Eq. (2) as firm-specific parameters to estimate the nondiscretionary accruals of each IPO firm in our sample. The residual term (ε) is the discretionary accruals (DAC) for each IPO firm and is used as a measure of earnings management. The discretionary accruals are winsorized at the 1st and 99th percentiles to reduce the outlier effect.

---

[8] We further divide IPOs firms in manufacturing industry (CSRC industry code C) into 10 groups based on the CSRC's one letter plus one digit industry classification. For example, C0, C1, and C2 are classified into different categories when calculating earnings management.

To obtain our second measure for earnings management, we use a performance matched abnormal accruals model based on Kothari, Leone, and Wasley (2005). More specifically, each IPO firm is matched with a non-issuing firm in the same industry and calendar period and with the closest ROA to the IPO firm's pre-IPO year ROA. The performance matched abnormal accruals for a sample firm is the difference between the discretionary accrual of the IPO firm and the discretionary accrual for its industry-year-performance matched firm. We also winsorize the Kothari performance matched discretionary accruals at the 1st and 99th percentiles. Our observations decrease from 1053 to 838 mainly because we lose IPO observations that listed in 2012.

3.3 Factors influencing earnings management

To examine the association between VCs and earnings management, we regress DAC on our three key variables of interest- VC backing (*VC dummy*), VC reputation (*Rep. VC*), and government VC backing (*Gov. VC*), in the IPO - in multivariate regression models. By controlling for other issue characteristics, we are better able to investigate the effects of *VC dummy*, *Rep. VC,* and *Gov. VC* on earnings management. More specifically, we estimated the following regression equation:

$$DAC_i = \alpha + \beta_1 \, VC \, dummy_i + \beta_2 \, Rep. \, VC_i + \beta_3 \, Gov. \, VC_i + Controls_i + \varepsilon_i \qquad (3)$$

Our regression models control for a number of factors that are often used in earning management literature. In terms of IPO firm characteristics, we include *IPO age*, which is measured as the logarithm of one plus issuer age. Old firms usually have established internal control and accounting system and therefore are expected to have lower earnings management (Chahine et al., 2012). We also control for *issuance size*, which is measured as the logarithm of an issuer's gross proceeds. Firms that have higher financing amount are more likely to manage their earnings (Chen, Shi, and Xu, 2011). High leveraged firms have strong incentives to manage earnings to avoid debt covenant violations (Lee and Masulis, 2011), and thus a positive relation is expected between *pre-IPO leverage* and earnings management. Since issuers with greater growth potential are generally associated with higher discretionary accruals, we follow Chen et al. (2011) and use percentage change in sales from pre-IPO year to IPO year.

Furthermore, we control for possible monitoring and certification effect of top auditors and prestigious underwriters. Top auditors and prestigious underwriters are better able and

motivated to examine client firms, and thus should be better able to certify the reliability of their accounting reports (e.g., Brau and Johnson, 2009; Lee and Masulis, 2011). Therefore we expect a negative relation between earnings management and reputation of IPO auditor and underwriter. *Auditor reputation* is measured as a dummy that is equal to one if the IPO firm hires the audit service of a top 6 auditor[9] in China, and zero otherwise. *Underwriter reputation* is also a dummy variable which equals to one if the underwriter is part of the top 8 underwriters in Chinese markets, based on their cumulative market share one year before the IPO, zero otherwise. Regional variations (*Coastal cities*) are also controlled. Poncet, Steingress, and Vandenbussche (2010) show that the geographical presence of foreign firms alleviates credit constraints of Chinese private firms. This fact implies that firms located in open coastal cities[10] have weaker incentive to manage earnings and raise much money in an IPO.

Previous studies in China show that state-owned enterprises (*Gov. IPOs*) have fewer incentives to manipulate earnings due to a lower risk of adverse selection by the CSRC, greater government support, and lower risks of financial distress compared to private firms (e.g., Aharony et al., 2000; Chen et al., 2011). Therefore, we expect a negative relationship between earnings management and *Gov. IPOs*, which is measured as an indicator variable denoting whether the IPO firm is controlled by the government. We also control for *CEO ownership*[11], which is measured as the percentage of shares held by both the CEO and CEO's family members. Liu and Lu (2007) document that conflicts between controlling shareholders and minority investors are positively related to earnings management as earnings management facilitates controlling shareholders' tunneling activities. Lastly, year and industry fixed effects are controlled for the changing economic conditions and for difference across industries respectively.

Table 2 reports the Pearson correlation coefficients between the variables used in this study. These correlation coefficients are generally within a normal range, indicating that our

---

[9] A mean of 2.2 % of our sample is audited by a Big Four auditor. The percentage of firms audited by Big Four auditors is relatively low in the SME and ChiNext Boards, when compared to 86.9 % in the U.S. market (Chahine et al, 2012) and 8.5% in the Main Boards of the Shanghai and Shenzhen Stock Exchanges in China (Chen et al., 2011). Our top 6 auditors are the Big Four (Deloitte, Ernst and Young, KPWG, PricewaterhouseCoopers) plus RSM International and BDO China Shu Lun Pan CPAs. Defining *Auditor reputation* on either Big Four or Top 6 produces similar empirical results on earnings management.
[10] Open coastal cities include the four "Special Economic Zones" (Shenzhen, Zhuhai, Shantou, and Xiamen), 14 other cities including Dalian, Qinhuangdao, Tianjin, Yantai, Qingdao, Lianyungang, Nantong, Shanghai, Ningbo, Wenzhou, Fuzhou, Guangzhou, Zhanjiang, and Beihai.
[11] We also use the percentage of shares held by the management (*management ownership*) as an alternative measure and find a significantly positive relationship between *management ownership* and earnings management. However, our results on the three key variables of interest remain the same.

variables are free of multicollinearity problems. We also check the variance inflation factors (VIFs) of our regression, and our test show that the VIFs of all the independent variables are less than 3, suggesting that our empirical model is not significantly affected by multicollinearity issues.

[Insert Table 2 about here]

4. Empirical Analysis

4.1 Descriptive statistics of earnings management

Table 3 reports the descriptive statistics for our two measures of earnings management. We find that the average DAC obtained from (i) the modified Jones model and (ii) the Kothari performance matched discretionary accruals model, are 0.084 and 0.088, respectively. This implies that on average, IPO issuers listed on SME and ChiNext Boards are likely to engage in upward earnings management. Comparing IPOs with and without VC backing, we find that the differences in earnings management are either insignificant or marginally significant in Panel A. This evidence does not support our **H1** that VC-backed IPOs significantly engage in income-increasing earnings management than do non-VC-backed IPOs. In addition, we do not find evidence of our **H2** that reputable VC-backed IPOs manage earnings to a less extent than do non-reputable VC-backed IPOs.

When we examine the level of earnings management of IPOs issuers backed by government and private VCs, we find that government VC-backed IPOs show significantly higher DAC in both Panels A and B of Table 3. This evidence supports our **H3** that government VC-backed IPOs engage in upward earnings management to a greater extent than do other IPO issuers.

[Insert Table 3 about here]

4.2 Multiple regression results of earnings management

Table 4 presents OLS estimates where the dependent variable is DAC, measured either by the modified Jones model (models 1-3) or the Kothari performance matched discretionary

accruals model (models 4-6). Models 1 and 4 present the multivariate regression results of Equation 3 for the two earnings management measures, respectively. We find that *VC dummy* is insignificant, suggesting that VC-backed IPOs do not manage earnings upward to a greater extent than non-VC-backed IPOs. Therefore, our **H1** is rejected. In terms of VC reputation, we do not find any positive impact of *Rep. VC* on earning management. This contradicts our **H2** that reputable VC-backed IPOs are less likely to engage in income-increasing earnings management compared to other IPO issuers. A possible reason is that VCs invest in a prospective IPO firm shortly before the IPO application and exit shortly after the one-year lock-up period; therefore, they do not care much about their reputation (Liu, Tang, and Tian, 2013). *Gov.VC* is positively related to the two proxies of earnings management at the 5% level or higher. This supports our **H3** that government VC backing leads to higher earnings management of IPOs issuers.

In models 2 and 5 of Table 4, we control for additional VC characteristics and find qualitatively similar results on our three key variables of interest. Specifically, we further include *VC ownership*, *VC age*, VC *syndicate size*, and *VC duration* to our regression specification. *VC ownership* is the pre-IPO ownership of lead VC firm. *VC age* proxies a VC's industry experience (Nahata, 2008) and is measures as the logarithm of the number of years between the inception date of the VC firm and the IPO date of its portfolio firm. *Syndicate size* is the number of VC syndicate members invested in an IPO issuer. *VC duration*[12] is a dummy denoting whether the number of years of a VC investing in its backed firm is longer than two years. We check our results with these four additional control variables, because an argument can be made that these variables are correlated with our existing independent variables. However, the results show that *Gov. VC* continues to have statistically significant associations with the two proxies for earnings management, while *VC dummy* and *Rep. VC* do not have reliable effects.

After finding that government-VC-backed IPOs are more likely to manage their earnings upward, we examine what type of government backed VCs has a greater propensity to manage earnings. As mentioned in Section 3.1, 78 (36) are local government (SOE) VC-backed IPOs, which account for 17% (8%) of VC-backed IPOs. Central government VC-backed IPOs only account for 2% of VC-backed IPOs. Examining models 3 and 6 of Table 4, we find that IPOs backed by local government VCs are likely to manage their earnings upward to a greater extent than other IPOs. Thus our **H3a** is supported. We also find that

---

[12] We also use the logarithm of the number of years between VCs' investment date and the IPO date as an alternative measure for VC duration and find similar results.

SOE VC has a significantly positive impact on Kothari performance matched measure on earnings management, but not for the Modified Jones measure. This result provides some evidence that IPOs backed by SOE VCs manage their earnings upward to a greater extent than other IPOs with similar pre-IPO operating performance.

Examining the control variables, IPO issuers with larger financing amount and higher pre-IPO leverage ratio are more likely to manage their earnings upwards, consistent with prior findings (e.g., Lee and Masulis, 2011; Chen et al., 2011). *Gov. IPO* is negatively associated with the two earnings management measures, suggesting that state-owned SMEs are less likely to manage their earnings. *Issuer age*, *growth in sales*, *auditor and underwriter reputation*, and *coastal cities* do not have reliable effects on earnings management.

[Insert Table 4 about here]

5. Robustness tests

5.1 The endogenous choice of Gov. VC

Until now, we find that *Gov. VC* has a positive relationship with our two earnings management measures. However, an empirical concern of this relationship relates to potential endogeneity of government VC backing. Indeed, government VCs may not randomly select portfolio firms and their investment decision may be related to firm-level characteristics such as growth and riskiness. To deal with potential endogeneity concerns of government VC backing, we estimate a commonly used empirical specification, namely the two-stage least squares (2SLS). The objective of this estimation method is to find instrument variables which are correlated with the endogenous variable, *Gov. VC*, but uncorrelated with the error terms. Here we estimated predicted values for *Gov. VC* by using a probit regression. The main instrumental variable we use for government VC-backing is Board listing indicator which takes a value of one when an IPO issue is initially listed on the ChiNext Board. This is to capture the greater discretion that government VC firms have their preferences for small and innovative SMEs. We also include *VC ownership*, *VC age*, *Syndicate size*, *VC duration* as additional instrumental variables. Table 5 presents the 2SLS results. We find that none of the instrumental variables is significantly related to any of our earnings management measures

but they are highly significant in the first stage. In short, they meet the relevance and exclusion requirements. More importantly, we find that the overall results confirm our conclusions in Table 4, and in that they show that DAC is positively affected by the involvement of government VC even after controlling for the endogeneity of government VC backing.

[Insert Table 5 about here]

5.2 Further robustness tests

This subsection contains some further robustness tests. For brevity, the results are available by request.

First, our results are robust to focusing on recent deals. One concern is that our sample comprises few VC-backed deals before 2006. It may be possible that IPO issuers report their earnings conservatively during this period, which may lead to sample selection bias. Thus we ensure that the results are robust to excluding deals before 2006. This also proves that our results are robust to the adoption of book-building pricing system in 2005.

Second, our results are robust to various fixed effects. The main results include year and industry dummies. We also include some region dummies and replace the industry dummies with the broader industry sectors to check robustness. We find that the results are qualitatively the same.

Third, we use a propensity score approach to control for non-randomness in the companies that receive government VC backing. The issue characteristics used in the first probit regression include *IPO age*, *issuance size*, *pre-IPO leverage*, *growth in sales*, *auditor and underwriter reputation*, *coastal cities*, *Gov. IPOs*, and *CEO ownership*. We calculate propensity scores of each IPO, which is the probability that an issuer will have government VC backing, based on conditions that exist at the time of VC backing. IPOs with government VC backing are matched to IPOs without government VC backing on a 1:1 matching, where the absolute difference between propensity scores was +/- 0.01. The results remain qualitatively the same.

6. Long-run stock and operating performance, earnings management and Gov. VC

Prior studies provide evidence from developed markets that IPO valuation is positively related to pre-IPO earnings (Purnanandam and Swaminathan, 2004) and IPO issuers who manage earnings opportunistically have worse performance in the long run (e.g. Teoh, et al., 1998b; Chahine, et al., 2012). Following their study, we continue to investigate the effects of earnings management and government VC backing on post-IPO stock and operating performance. First, we calculate monthly abnormal returns as a particular issuer's monthly adjusted returns minus the monthly value-weighted market index returns. We use the Shenzhen Stock Exchange A-share index as the benchmark since the SME Board index and the ChiNext index were not introduced until 2006 and 2010, respectively. Also indices' returns are generally highly correlated in Chinese markets[13]. The 12-, 24-, and 36-month post-issue cumulative abnormal returns (CAR) are then calculated as the sum of the consecutive monthly abnormal returns using the month immediately after the month of IPO. We use post-IPO ROA and the ratio of operating cash flows to total assets (OCF) as two measures for post-IPO operating performance. Our multivariate analysis is based on the following model:

$$CAR_i \text{ (or ROA or OCF)} = \alpha + \beta_1 \, DAC\_PRED_i + \beta_2 \, Gov. \, VC_i + \beta_3 \, VC \, dummy_i + \beta_4 \, Rep.$$
$$VC_i + Controls_i + \varepsilon_i \qquad (4)$$

Including both DAC and *Gov. VC* in the model, we examine the mechanism of how *Gov. VC* and earning management affect post-IPO performance. Since DAC is affected by *Gov. VC*, as documented in our previous analysis, we follow Chen et al. (2013) and Chahine et al. (2012) by using the predicted value of the OLS model in Equation 3, DAC_PRED, in this regression. We include *initial returns, pre-IPO ROA, issuer age, insurance size, pre-IPO leverage, growth in sales, auditor* and *underwriter reputation, coastal cities, Gov. IPO,* and *CEO ownership* as the control variables. Industry and year fixed effects are also included in the model.

Table 6 presents the regression analysis for CAR, ROA, and OCF over one-year, two-year, and three-year periods following the month of IPO. Models 1-3 show that the positive impact of *Gov. VC* on DAC does not result in significantly negative post-IPO stock returns. A

---

[13] We also use the SME index as the benchmark and lose the observations of IPOs listed before 2006, and we find that the key results remain the same.

possible reason may be that investors emphasize operating performance less when evaluating Gov. VC-backed firms (Chen et al., 2013). Models 4-9 indicate that the positive impact of *Gov. VC* on DAC leads to worse operating performance, especially in the two-year and three-year periods. This indicates that lower earnings quality caused by Gov. VC deteriorates post-IPO operating performance. *VC dummy* is negatively related to CAR, ROA, and OCF one-year following the month of IPO, indicating that VC-backed IPOs generally underperform non-VC-backed IPOs one-year after the IPO. We also find that *Rep. VC* is positively related to post-issue operating performance, indicating the monitoring effect of reputable VCs on the earnings quality of IPO issuers in the long-run.

[Insert Table 6 about here]

7. Conclusion

This paper analyses the impacts of VC backing, VC reputation, and government VC backing on earnings management of SME IPOs in China. Using a sample of 1053 IPO issuers from 2004 to 2012, we find no difference in opportunistic earnings management between VC- and non-VC backed IPOs. Further, in contrast to developed market evidence, reputable VCs do not have a constraining effect on earnings management of IPO issuers in China. Instead, we find that government VC-backed IPOs exhibit more income-increasing earnings management than other IPOs. A breakdown of government VCs into central and local government, and SOE VCs shows that VCs with controlling shareholders as the local government are more likely to encourage earnings management of their portfolio firms. Our results are robust to alternative measures for earnings management while controlling for the endogenous choices of VC financing and government VC backing. We also show that high abnormal accruals associated with government VC backing lead to poor operating performance after the IPO, and reputable VCs have some monitoring effect on the post-issue operating performance of IPO issuers.

The main implications from these findings are that government VCs, in particular local government VCs, are more likely to push their portfolio firms into the IPO market by managing their earnings. The reasons why entrepreneurs are willing to surrender partial ownership to government VCs are to strengthen their financial positions or to obtain government VCs' special relationships with the listing approval authorities (Tan et al., 2013).

The Chinese government has started to invest in private and foreign VCs rather than individual SMEs, in order to allow markets to allocate the increased supply of capital. In addition, the recent IPO overhaul plan indicates a significant easing on government control over China's IPO market (Li, 2013). To ensure the long-term development of the VC market, Chinese policy makers should continue its current trend of decreasing direct government intervention in both the IPO and VC markets. Instead of acting as venture capitalists themselves, the Chinese government should encourage private and foreign VCs to invest in young and high-tech entrepreneurial firms. This can be done by placing incentive structure, introducing favorable policies for early-stage investments, and strengthening enforcements in laws and regulations. Furthermore, rigorous regulations and disclosure rules are needed to reduce earnings management and provide explicit evidence for detecting and penalizing misreporting behaviors.

Reference

Aharony, J., Lee, C.-W. J., Wong, T. J., 2000. Financial packaging of IPO firms in China. Journal of Accounting Research 38, 103-126.

Brander, J.A., Egan, E., Hellman, T.F., 2008. Government sponsored versus private venture capital: Canadian evidence. NBER working paper series.

Brau, J.C., Johnson, P.M., 2009. Earnings management in IPOs: Post-engagement third-party mitigation or issuer signaling? Advance in Accounting 25, 125-135.

Bruton, G. D., Ahlstrom, D., 2003. An institutional view of China's venture capital industry: Explaining the differences between China and the West. Journal of Business Venturing 18, 233-259.

Chahine, S., Arthus, J.D., Filatotchev, I., Hoskisson, R.E., 2012. The effects of venture capital syndicate diversity on earnings management and perforamnce of IPOs in the US and UK: An institutional perspective. Journal of Corporate Finance 18, 179-192.

China Business Review, 2009. A new welcome for venture capital. URL http://www.chinabusinessreview.com/a-new-welcome-for-venture-capital/ (assessed on 11.10.2014).

China Security Regulatory Commission, Decree No.30, 2006. The Administrative Measures for the Issurance of Securities by Listed Companies (May 6, [In Chinese]).

Chen, J., 2010. China's venture capital guiding funds: Policies and practice. Journal of Chinese Entrepreneurship 2, 292-297.

Chen, C., Shi, H., Xu, H., 2013. Underwriter Reputation, Issuer Ownership, and Pre-IPO Earnings Management: Evidence from China. Financial Management 42, 647-677.

Cornett, M. M., Marcus, A. J., Saunders, A., Tehranian, H., 2006. Earnings management, corporate governance, and true financial performance. Working paper. Boston college, Bentley University, and New York University.

Cumming, D.J., MacIntosh, J.G., 2006. Crowing out private equity: Canadian evidence. Journal of Business Venturing 21, 569-609.

Ernst and Young, 2014. Global venture capital insights and trends. URL http://www.ey.com/Publication/vwLUAssets/Global_venture_capital_insights_and_trends_2014/$FILE/EY_Global_VC_insights_and_trends_report_2014.pdf (assessed 08.10.2014).

Florida, R., Smith, D.F., 1993. Keep the government out of venture capital. Issues in Science and Technology 9, 61-68.

Gao, Y., 2010. What comprises IPO initial returns: Evidence from the Chinese market. Pacific-Basin Finance Journal 18, 77-89.

Gompers, P. A., 1995. Optimal investment, monitoring, and the staging of venture capital. Journal of Finance 50, 1461-1489.

Gompers, P.A., 1996. Grandstanding in the venture capital industry. Journal of Fianncial Economics 42, 133-156.

Guo, D., 2008. Venture capital institutions and venture capitalists' investment activities: An empirical study on China. Working paper: University of Hong Kong.

Guo, D., Jiang, K., 2013. Venture capital investment and the performance of entrepreneurial firms: Evidence from China? Journal of Corporate Finance 22, 375-395.

Healy, B. (2002). Insider or outsider? Cozy ties with management are raising questions when VCs sit on corporate boards. *Boston Globe*.

Hellman, T., Puri., M., 2002. Venture capital and the professionalization of start-up firms: Empirical evidence. Journal of Finance 57, 169-197.

Hochberg, Y. V., 2005. Venture capital and corporate governance in the newly public firms. Unpublished work: Cornell University.

Hribar, P., Collins, D.W., 2002. Errors in estimating accruals: Implications for empirical research. Journal of Accounting Research 40, 105-134.

Humphery-Jenner, M., Suchard, J., 2013. Foreign venture capitalists and the internationalization of entrepreneurial companies: Evidence from China. Journal of International Business Studies 44, 607-621.

Jones, J. J., 1991. Earnings management during import relief investigations. Journal of Accounting Research 29, 193-228.

Kao, J. L., Wu, D., Yang, Z., 2009. Regulations, earnings management, and post-IPO performance: The Chinese evidence. Journal of Banking and Finance 33, 63-76.

Katz, S. P., 2009. Earnings quality and ownership structure: The role of private equity sponsors. The Accounting Review 84, 623-658.

Kenney, M., Han, K., Tanaka, S., 2004. Venture capital industries in East Asia. In Yusuf, S., Altaf, M., and Nabeshima, K. (eds) *Global changes and East Asian policy initiatives* (pp391-427). Oxford University Press.

Kothari, S.P., Leone, A. J., Walsey, C.E., 2005. Performance matched discretionary accrual measures. Journal of Accountuing and Economics 39, 163-197.

Krishnan, C. N. V., Ivanov, V. I., Masulis, R. W., Singh, A. K., 2011. Venture capital reputation, post-IPO performance, and corporate governance. Journal of Financial and Quantitative Analysis 46, 1295-1333.

Lee, P. M., Wahal, S., 2004. Grandstanding, certification and the underpricing of venture capital backed IPOs. Journal of Financial Economics 73, 375-407.

Lee, G., Masulis, R. W., 2011. Do more reputable financial institutions reduce earnings management by IPO issuers? Journal of Corporate Finance 17, 982-1000.

Leleux, B., Surlemont, B., 2003. Public versus private venture capital: seeding or crowing out? A pan-European anlysis. Journal of Business Venturing 18, 81-104.

Lerner, J., 1999. The government as venture capitalist: The long-run effects of the SBIR program. Journal of Business 72, 285-318.

Lerner, J., 2002. When bureaucrats meet entrepreneurs: The design of effective public venture capital's programmes. The Economic Journal 112, 73-84.

Li, A., 2013. China unveils IPO guidelines ahead of expected new-offering flood. *Wall Street Journal*. URL http://online.wsj.com/news/articles/SB10001424052702304017204579229691357340398 (assessed on 10.10.2014).

Liu, Q., Tang, J., Tian, G., 2013. Does political capital create value in the IPO market? Evidence from China. Journal of Corporate Finance 2013, 395-413.

Liu, J., Uchida, K., Gao, R., 2012. Earnings management of initial public offering firms: Evidence from regulation changes in China. Accounting and Finance 54, 505-537.

Liu, Q., Lu, Z., 2007. Corporate governance and earnings management in the Chinese listed companies: A tunneling perspective. Journal of Corporate Finance 13, 881-906.

Lu, H., Tan, Y., Huang, H., 2012. Why do venture capital firms exist: An institution-based rent-seeking perspective and Chinese evidence. Asia Pacific Journal of Management 30, 1-16.

Mok, H. M. K., Hui, Y. V., 1998. Underpricing and aftermarket performance of IPOs in Shanghai, China. Pacific-Basin Finance Journal 6, 453-474.

Morsfield, S. G., Tan, C. E. L. 2006. Do venture capitalists influence the decision to manage earnings in initial public offerings? Accounting Review 81, 1119-1150.

Nahata, R., 2008. Venture capital reputation and investment performance. Journal of Financial Economics 90, 127-151.

Noronha, C., Zeng, Y., Vinten, G., 2008. Earnings management in China: An exploratory study. Managerial Auditing Journal 23, 367-385.

Okhmatovskiy, I., 2010. Performance implications of ties to the government and SOEs: A political embeddedness perspective. Journal of Management Studies 47, 1020-1047.

Poncet, S., Steingress,W., Vandenbussche, H., 2010. Financial constraints in China: Firm-level evidence. China Economic Review 21, 411-422.

Purnanandam, A. K., Swaminathan, B., 2004. Are IPOs really underpriced? Review of Financial Studies 17, 251-274.

Stross, R. E., 2000. Venture capitalists aren't villains. *Wall Street Journal.*

Teoh, S., Welch, I., Wong, T. J., 1998b. Earnings management and the long-run market performance of initial public offerings. Journal of Finance 53, 1935-1974.

Teoh, S., Wong, T. J., Rao, G., 1998a. Are accruals during initial public offerings opportunistic? Review of Accounting Studies 3, 175-208.

Tan, Y., Huang, H., and Lu, H., 2013. The effect of venture capital investment: Evidence from China's Small and Medium-Sized Enterprises Board. Journal of Small Business Management 51, 138-157.

White, S., Gao, J., Zhang, W., 2004. Antecedents and institutionalization of China's venture capital system. Working paper. Insead.

Wright, M., Lockett, A., Pruthi, S., 2002. Internationalization of western venture capitalists into emerging markets: Risk Assessment and Information in India. Small Business Economics 19, 13-29.

Wright, M., 2007. Venture capital in China: A view from Europe. Asia Pacific Journal of Management 24, 269-281.

Wong, A., 2011. The evolution of the venture capital market in China: Current trends in venture capital financing strategies and investment preference. Journal of Investing 20, 16-26.

World Bank, 2005. *Step by step corporate governance models in China- the experience of the international Finance Corporation.* Washington, DC: World Bank.

Yang, Z., 2013. Do political connections add value to audit firms? Evidence from IPO audits in China. Comtemporary Accounting Research 30, 891-921.

Zhang, L., 2012. Venture capital and the corporate governance of Chinese listed companies. Springer, New York.

Zhang, Z., Li, Y., 2011. Why do ChiNext board firms accept private equity shortly before IPO: an explanation from trade-off perspective. Working Paper: Shanghai University of Finance and Economics.

Zhang, W., Gao, J., White, S., Vega, P., 2008. Venture capital an the financing of China's new technology firms. In McNally, C.A. (Eds.), *China's emergent political economy: Capitalism in the dragon's lair* (pp60-82). New York: Routledge.

Table 1: Sample distribution

Our sample includes 1053 IPOs listed on the SME and venture boards from 2004 to 2012. Panel A shows the frequency distribution of IPOs by year. Panel B presents the industry distribution of our sample firms. Panel C reports IPO issuer characteristics. The differences in means are based on the independent t-test. Panel D shows the VC-related characteristics. All variables are defined in Appendix 1. *, **, ***represent statistical significance at 10%, 5%, and 1% level, respectively.

Panel A: Distribution by IPO listing year

Year	Full sample		VC	Non-VC	Gov. VC	Private VC	Rep. VC	Less Rep. VC
	Freq.	%	Freq.	Freq.	Freq.	Freq.	Freq.	Freq.
2004	38	3.6	8	30	6	2	2	6
2005	12	1.1	0	12	0	0	0	0
2006	52	4.9	12	40	7	5	1	11
2007	99	9.4	23	76	13	10	4	19
2008	71	6.7	21	50	5	16	3	18
2009	90	8.5	50	40	17	33	5	45
2010	320	30.4	141	179	41	100	29	112
2011	243	23.1	119	124	26	93	13	106
2012	128	12.2	75	53	10	65	53	22
Total	1053	100	449	604	125	324	110	339

Panel B: Distribution by industry

Industry	Full sample		VC	Non-VC	Gov. VC	Private VC	Rep. VC	Less Rep. VC
	Freq.	%	Freq.	Freq.	Freq.	Freq.	Freq.	Freq.
Agriculture, fishing and stock raising	21	2.0	7	14	2	5	1	6
Mining	13	1.2	7	6	2	5	3	4
Manufacturing	769	73.0	325	444	94	231	78	247
Utilities	4	0.4	0	4	0	0	0	0
Construction	22	2.1	9	13	3	6	3	6
Transportation and Warehousing	11	1.0	4	7	0	4	0	4
IT	136	12.9	69	67	18	51	19	50
Wholesale and retail	23	2.2	7	16	0	7	1	6
Real state	6	0.6	1	5	1	0	1	0
Social service	32	3.0	15	17	4	11	3	12
Media	14	1.3	5	9	1	4	1	4
Conglomerates	2	0.2	0	2	0	0	0	0
Total	1053	100	449	604	125	324	110	339

(Table 1continued…)

Panel C: IPO firm characteristics

Column	Full sample	VC	Non VC	Diff	Rep. VC	Less Rep. VC	Diff	Gov. VC	Private VC	Diff
	[1]	[2]	[3]	[4]=[2]-[3]	[5]	[6]	[7]=[5]-[6]	[8]	[9]	[10]=[8]-[9]
Issuer age(years)	11.354	11.352	11.356	-0.005	11.689	11.242	0.4470	10.752	11.583	-0.831
Total assets (RMB million)	648.22	601.704	682.799	-81.096**	580.283	608.654	-28.372	539.358	625.757	-86.398
Offer price(RMB)	22.99	25.394	21.207	4.187***	23.798	25.911	2.1140	23.832	25.996	-2.164
Gross proceeds (RMB million)	656.609	726.387	604.559	121.828***	658.263	748.492	-90.229*	647.525	756.812	-109.287**
Initial return	0.619	0.535	0.682	-0.147***	0.434	0.567	-0.133*	0.674	0.481	0.193***
Leverage	0.463	0.443	0.478	-0.034***	0.392	0.460	0.068***	0.454	0.439	0.016
ROA$_{-1}$	0.143	0.148	0.14	-0.008*	0.163	0.143	0.020**	0.136	0.152	-0.016**
CFO/total assets$_{-1}$	0.128	0.121	0.133	-0.012**	0.116	0.123	-0.007	0.111	0.125	-0.014
Growth in sales	0.409	0.393	0.421	-0.029	0.347	0.407	-0.060	0.472	0.362	-0.11
Auditor ranking	0.209	0.209	0.209	-0.001	0.264	0.192	-0.072	0.2	0.21	-0.010
Underwriter ranking	0.387	0.434	0.353	0.082***	0.5	0.413	0.0870	0.432	0.381	0.051
Coastal Cities	0.299	0.318	0.285	0.034	0.336	0.313	0.024	0.384	0.293	0.091*
Gov. IPO	0.116	0.078	0.144	-0.066***	0.045	0.088	-0.043	0.104	0.117	-0.013
Gov. ownership	0.099	0.078	0.115	-0.036**	0.044	0.089	-0.045**	0.153	0.05	0.103***
Largest ownership	0.592	0.558	0.616	-0.058***	0.570	0.554	0.0150	0.492	0.583	-0.091***
Management ownership	0.659	0.649	0.668	-0.019	0.681	0.638	0.043***	0.585	0.673	-0.089***
CEO ownership	0.472	0.476	0.469	0.007	0.504	0.468	0.036	0.419	0.499	-0.080***

Panel D: VC characteristics

	Obs.	Mean	Median	S.D.	Max	Min
Rep. VC	449	0.245	0.000	0.431	1.000	0.000
Gov. VC	449	0.278	0.000	0.449	1.000	0.000
Central Gov. VC	449	0.022	0.000	0.097	1.000	0.000
Local Gov. VC	449	0.176	0.000	0.262	1.000	0.000
SOE VC	449	0.080	0.000	0.182	1.000	0.000
VC ownership	449	0.100	0.075	0.073	0.609	0.003
VC age (years)	449	5.340	3.700	5.021	22.781	0.000
VC syndicate size	449	1.927	2.000	1.131	5.000	1.000
VC duration (years)	449	2.765	2.367	1.881	12.739	0.344

Table 2: Pearson correlations
Our sample includes 1053 IPOs listed on the SME and venture boards from 2004 to 2012. All variables are defined in Appendix 1. *, **, ***represent statistical significance at 10%, 5%, and 1% level, respectively.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
(A) VC dummy	1	0.426***	0.396***	0.009	0.151***	-0.105***	-0.016	0.053*	-0.097***	0.001	0.083***	0.036	-0.102	-0.013
(B) Gov. VC		1	0.230***	-0.031	-0.010	-0.019	0.027	-0.038	0.027	-0.008	0.034	0.068	-0.014	-0.066**
(C) Rep. VC			1	0.027	0.014	-0.150***	-0.025	0.092***	-0.084***	0.046	0.079	0.028	-0.075**	0.045
(D) Issuer age				1	0.089***	0.047	-0.067**	-0.073**	-0.118***	-0.023	-0.005	0.060*	-0.082***	0.062**
(E) Gross proceeds					1	-0.046	-0.024	0.239***	-0.453***	0.053	0.172***	0.026	-0.085***	0.116***
(F) Pre-IPO leverage						1	-0.127***	-0.645***	0.143***	-0.03	-0.098***	-0.093***	0.130***	-0.087***
(G) Growth in sales							1	0.090***	0.008	-0.058*	0.015	0.021	-0.053*	0.056*
(H) Pre-IPO ROA								1	-0.163***	-0.005	0.093***	0.113	-0.161***	0.127***
(I) Initial returns									1	-0.002	-0.091***	0.015	0.174***	-0.158***
(J) Auditor reputation										1	-0.025	0.062**	0.040	-0.034
(K) Underwriter reputation											1	0.047	-0.063**	0.072**
(L) Coastal Cities												1	-0.042	0.043
(M) Gov. IPO													1	-0.557***
(N) CEO ownership														1

Table 3: Descriptive statistics of earnings management
This table presents descriptive statistics of the degree of earnings management represented by discretionary accruals (DAC) estimated from (i) the modified Jones model and (ii) the Kothari et al. (2005) performance matched discretionary accruals model. Variable definitions are included in Appendix 1. The differences in means and medians are based on the independent t-test and Wilcoxon test, respectively. *, **, ***represent statistical significance at 10%, 5%, and 1% level, respectively.

Panel A: Modified Jones model

	Obs	1%	25%	Median	75%	99%	Mean	Diff in mean	Diff in median
All	1053	-0.278	-0.014	0.061	0.159	0.616	0.084		
VC dummy									
VC-backed	449	-0.236	-0.013	0.066	0.171	0.636	0.094	0.017*	0.010
Non VC-backed	604	-0.281	-0.016	0.056	0.149	0.551	0.077		
VC reputation									
More Rep. VC	110	-0.248	-0.021	0.064	0.195	0.612	0.103	0.013	-0.001
Less Rep. VC	339	-0.234	-0.013	0.065	0.164	0.637	0.089		
VC type									
Gov. VC	125	-0.192	0.017	0.096	0.209	0.636	0.120	0.036**	0.035**
Private VC	324	-0.236	-0.021	0.061	0.157	0.612	0.084		

Panel B: Performance Matched model

	Obs	1%	25%	Median	75%	99%	Mean	Diff in mean	Diff in median
All	838	-0.371	-0.035	0.074	0.208	0.642	0.088		
VC dummy									
VC-backed	346	-0.367	-0.034	0.088	0.214	0.679	0.098	0.017	0.020
Non VC-backed	492	-0.387	-0.036	0.068	0.198	0.587	0.081		
VC reputation									
Rep. VC	53	-0.218	-0.017	0.081	0.254	0.679	0.131	0.039	-0.008
Less Rep. VC	293	-0.432	-0.042	0.089	0.210	0.703	0.092		
VC type									
Gov. VC	107	-0.265	-0.003	0.132	0.263	0.598	0.142	0.064***	0.063***
Private VC	239	-0.432	-0.055	0.069	0.194	0.679	0.078		

Table 4: Estimates of venture capitalist associations with earnings management

This table presents ordinary least squares (OLS) estimates for IPOs occurring during 2004-2010 in the SME and the ChiNext Boards. The dependent variable is earnings management defined as abnormal accrual estimated from either (i) a modified Jones model, or (ii) a Kothari et al. (2005)'s performance matched model. Variable definitions are included in Appendix 1. All regressions include year and industry fixed effects. Robust p-values, heteroskedasticity-adjusted, are shown in the parentheses. *, **, ***represent statistical significance at 10%, 5%, and 1% level respectively.

	Modified Jones Model			Performance matched		
	[1]	[2]	[3]	[4]	[5]	[6]
VC dummy	-0.003	-0.002	-0.001	-0.015	-0.031	-0.013
	(0.806)	(0.923)	(0.913)	(0.330)	(0.345)	(0.397)
Rep. VC	0.045	0.006	0.006	0.015	0.012	0.009
	(0.650)	(0.759)	(0.744)	(0.639)	(0.707)	(0.785)
Gov. VC	0.046**	0.045**		0.069***	0.068***	
	(0.011)	(0.011)		(0.003)	(0.005)	
Central Gov. VC			-0.033			-0.051
			(0.454)			(0.416)
Local Gov. VC			0.058**			0.078***
			(0.011)			(0.008)
SOE VC			0.038			0.072**
			(0.169)			(0.032)
IPO age	-0.019	-0.017	-0.018	-0.024	-0.021	-0.024
	(0.100)	(0.128)	(0.117)	(0.150)	(0.213)	(0.141)
Issuance size	0.027***	0.027***	0.029***	0.018	0.018	0.018
	(0.009)	(0.009)	(0.004)	(0.208)	(0.204)	(0.203)
Pre-IPO leverage	0.086***	0.088***	0.084***	0.113**	0.078*	0.114**
	(0.006)	(0.005)	(0.008)	(0.018)	(0.089)	(0.017)
Growth in sales	-0.006	-0.007	-0.006	-0.001	-0.002	-0.001
	(0.325)	(0.305)	(0.319)	(0.912)	(0.830)	(0.909)
Auditor reputation	-0.011	-0.010	-0.012	-0.025*	-0.021	-0.026*
	(0.320)	(0.361)	(0.300)	(0.099)	(0.162)	(0.090)
Underwriter reputation	-0.006	-0.007	-0.005	0.012	0.012	0.012
	(0.546)	(0.477)	(0.635)	(0.398)	(0.418)	(0.410)
Coastal cities	-0.006	-0.006	-0.007	0.000	0.000	-0.002
	(0.583)	(0.596)	(0.528)	(0.995)	(0.988)	(0.896)
Gov. IPOs	-0.036**	-0.036**	-0.036**	-0.046*	-0.049**	-0.047*
	(0.030)	(0.031)	(0.036)	(0.068)	(0.048)	(0.063)
CEO ownership	0.006	0.007	0.006	0.000	0.003	-0.001
	(0.768)	(0.747)	(0.788)	(0.998)	(0.912)	(0.971)
VC ownership		0.101			0.095	
		(0.305)			(0.445)	
VC age		-0.001			-0.006	
		(0.958)			(0.671)	
Syndicate size		0.004			0.015	
		(0.581)			(0.152)	
VC duration		-0.027			-0.014	
		(0.103)			(0.551)	
Constant	-0.416**	-0.427**	-0.454**	-0.372	-0.238	-0.346
	(0.046)	(0.043)	(0.024)	(0.203)	(0.408)	(0.218)
Industry and year fixed effects	Present	Present	Present	Present	Present	Present
Obs.	1053	1053	1053	838	838	838
R^2	0.049	0.053	0.052	0.077	0.069	0.079

Table 5: 2SLS regressions on earnings management

This table presents two stage least squares estimates for IPOs occuring during 2004-2010 in the SME and ChiNext Boards. In the first stage, *Gov. VC* is estimated using probit regression. In the second stage, the fitted values of *Gov. VC* from the first stage regression are replaced for *Gov. VC* indicator variable. The dependent variables in the second stage regressions are earnings management measured by discretionary accruals based on modified Jones model and Kothari performance matched accrual models, respectively. Variable definitions are included in Appendix 1. All regressions include year and industry fixed effects. Robust p-values, heteroskedasticity-adjusted, are shown in the parentheses. *, **, ***represent statistical significance at 10%, 5%, and 1% level respectively.

	First stage		Second stage	
	Modified Jones [1]	Performance matched [2]	Modified Jones [3]	Performance matched [4]
Board	0.413**	0.419**		
	(0.017)	(0.043)		
Gov. VC			0.059**	0.054*
			(0.042)	(0.053)
Rep. VC	0.478**	0.519**		
	(0.012)	(0.015)		
IPO age	-0.039	-0.123	-0.018	-0.024
	(0.774)	(0.568)	(0.109)	(0.164)
Issuance size	-0.017	-0.236*	0.027***	0.017
	(0.867)	(0.088)	(0.009)	(0.596)
Leverage	0.534	0.832	0.083***	0.113***
	(0.134)	(0.151)	(0.006)	(0.001)
Growth in sales	-0.016	-0.033	-0.007	-0.001
	(0.808)	(0.729)	(0.324)	(0.875)
Auditor ranking	-0.059	0.186	-0.011	-0.024
	(0.656)	(0.332)	(0.329)	(0.290)
Underwriter ranking	0.120	0.104	-0.007	0.012
	(0.283)	(0.513)	(0.507)	(0.394)
Coastal cities	0.217*	0.119	-0.005	-0.000
	(0.059)	(0.482)	(0.662)	(1.000)
Gov. IPO	-0.274	-0.021	-0.035**	-0.045*
	(0.183)	(0.937)	(0.037)	(0.084)
CEO ownership	-0.641***	-0.186	0.008	0.000
	(0.003)	(0.585)	(0.709)	(0.996)
VC ownership	3.283***	2.959***		
	(0.000)	(0.000)		
VC age	0.523***	0.611**		
	(0.000)	(0.000)		
Syndicate size	0.271***	0.305***		
	(0.000)	(0.000)		
VC duration	0.401***	0.380**		
	(0.006)	(0.034)		
Constant	-2.236	-0.758	-0.415**	-0.350
	(0.282)	(0.779)	(0.047)	(0.570)
Industry and year fixed effects	Presented	Presented	Presented	Presented
Obs.	1053	838	1053	838
R^2	0.385	0.425	0.045	0.068

Table 6: Analysis of post-IPO performance

This table presents the 2SLS multivariate analysis of the long-run performance on discretionary accruals. DAC_PRED is the predicted valued of the OLS regression in Table 5. The dependent variables for models 1-3 are CAR 1 year, 2 years, and 3 years after the month of IPO, respectively. For models 4-6 and models 7-9, the dependent variables are ROA and OCF after the IPO, respectively. Variable definitions are included in Appendix 1. All regressions include year and industry fixed effects. Robust p-values, heteroskedasticity-adjusted, are shown in the parentheses. *, **, ***represent statistical significance at 10%, 5%, and 1% level respectively.

	CAR1Y	CAR2Y	CAR3Y	ROA1Y	ROA2Y	ROA3Y	OCF1Y	OCF2Y	OCF3Y
Column	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
DAC_PRED	-2.451	2.895	-6.297	-0.130	-0.696***	-0.531*	-0.383*	-0.526***	-1.207***
	(0.470)	(0.770)	(0.241)	(0.182)	(0.006)	(0.092)	(0.061)	(0.007)	(0.003)
Gov. VC	0.150	-0.122	0.347	0.003	0.005	0.007	-0.000	-0.007	-0.004
	(0.367)	(0.801)	(0.226)	(0.418)	(0.149)	(0.235)	(0.999)	(0.173)	(0.391)
VC dummy	-0.065***	-0.003	-0.006	-0.004*	0.002	0.002	-0.010*	0.004	0.006
	(0.004)	(0.956)	(0.908)	(0.056)	(0.656)	(0.867)	(0.079)	(0.601)	(0.235)
Rep.VC	-0.028	-0.038	0.028	-0.011**	0.018***	0.008	0.001	0.018**	0.024**
	(0.586)	(0.701)	(0.804)	(0.020)	(0.009)	(0.387)	(0.936)	(0.015)	(0.029)
Initial returns	-0.069	-0.101**	-0.124**	-0.001	0.001	0.007	0.009**	-0.002	0.004
	(0.108)	(0.035)	(0.027)	(0.722)	(0.786)	(0.442)	(0.042)	(0.382)	(0.275)
ROA-1	0.168	0.129	0.595*	0.164***	0.183***	0.185**	0.149***	0.139	0.063
	(0.344)	(0.682)	(0.083)	(0.002)	(0.009)	(0.037)	(0.003)	(0.105)	(0.114)
Ln(1+Issuer age)	-0.042	0.009	-0.185**	0.002	-0.006	-0.006	-0.003	0.003	-0.009
	(0.504)	(0.095)	(0.028)	(0.454)	(0.201)	(0.701)	(0.639)	(0.503)	(0.416)
Issuance size	0.055	-0.171	-0.049	0.009***	0.024***	0.030*	0.027***	0.023***	0.052***
	(0.605)	(0.556)	(0.826)	(0.009)	(0.000)	(0.057)	(0.008)	(0.001)	(0.000)
Pre-IPO leverage	0.107	-0.457	0.360	-0.035**	0.016	0.003	-0.036	0.025	0.045
	(0.770)	(0.645)	(0.453)	(0.029)	(0.355)	(0.945)	(0.198)	(0.361)	(0.314)
Growth in sales	-0.035	0.021	0.018	-0.000	-0.003	-0.001	-0.000	-0.004*	-0.009***
	(0.214)	(0.318)	(0.319)	(0.939)	(0.394)	(0.615)	(0.941)	(0.079)	(0.001)
Auditor reputation	-0.023	0.014	-0.002	0.001	-0.008***	-0.005	0.002	-0.003	-0.008
	(0.602)	(0.910)	(0.982)	(0.691)	(0.008)	(0.620)	(0.608)	(0.542)	(0.241)
Underwriter	-0.033	0.025	-0.046*	-0.001	-0.005	-0.005	0.002	-0.002	-0.004
Reputation	(0.221)	(0.668)	(0.086)	(0.509)	(0.164)	(0.620)	(0.726)	(0.558)	(0.416)
Coastal cities	-0.045	-0.025	-0.047	-0.003	-0.006	-0.004	-0.003	-0.005	-0.006
	(0.709)	(0.800)	(0.570)	(0.171)	(0.291)	(0.398)	(0.524)	(0.151)	(0.277)
Gov. IPO	-0.045	0.143	-0.146	-0.007	-0.016	-0.015	0.015	0.007	-0.027**
	(0.709)	(0.666)	(0.494)	(0.310)	(0.232)	(0.427)	(0.227)	(0.487)	(0.020)
CEO ownership	0.123*	0.118	0.098	-0.003	0.001	0.001	-0.007	-0.001	-0.014**
	(0.053)	(0.197)	(0.285)	(0.438)	(0.703)	(0.985)	(0.467)	(0.932)	(0.042)
Constant	-0.588	3.629	1.557	-0.116*	-0.356***	-0.467*	-0.467***	-0.356***	-0.815***
	(0.738)	(0.446)	(0.693)	(0.055)	0	(0.073)	(0.013)	(0.002)	(0.000)
Industry and year fixed effects	Present	Present	Present	Present	Present	Present	Present	Present	Present
Obs.	1053	1013	832	1053	925	682	1053	925	682
R^2	0.207	0.195	0.211	0.202	0.172	0.087	0.144	0.083	0.104

Appendix A: Definitions of variables

Variables	Definitions
DAC	Discretionary accruals are computed by either (i) the Modified Jones (1991) Model, (ii) or Kothari et al. (2005) performance matched model.
VC dummy	A dummy variable that takes a value of one for VC-backed IPOs, and zero otherwise.
Rep. VC	A dummy variable takes a value of one if a VC's prior market share of VC-backed IPOs in the past three years ranks in the top 25% in the VC market the year prior to an IPO, and zero otherwise.
Gov. VC	A dummy variable takes a value of one if the lead VC is controlled by the government, and zero otherwise.
Central Gov. VC	A dummy variable takes a value of one if the lead VC is controlled by central government, and zero otherwise.
Local Gov. VC	A dummy variable takes a value of one if the lead VC is controlled by local government, and zero otherwise.
SOE VC	A dummy variable takes a value of one if the lead VC is controlled by state-owned enterprises, and zero otherwise.
Private VC	A dummy variable takes a value of one is the lead VC is not government controlled, and zero otherwise
IPO age	The logarithm of one plus issuer age, which is measured as the number of years between the establishment date of the IPO firm and the IPO date.
Issuance size	The logarithm of gross proceeds, which is measured as the product of offer price and the number of shares issuing.
Pre-IPO leverage	Total debt to total assets ratio one year before IPO.
ROA_{-1}	Net income to total assets one year before IPO.
OCF_{-1}	Operating cash flow to total assets one year before IPO.
Initial returns	The percent difference between aftermarket price and offer price of an IPO.
Growth in sales	The percentage change in sales from pre-IPO year to IPO year.
Auditor reputation	A dummy variable takes a value of one if the IPO firm hires the audit service of a top 6 auditor in China, and zero otherwise.
Underwriter reputation	A dummy variable takes a value of one if the underwriter of the IPO firm is part of the top 8 underwriters in Chinese market, based on their cumulative market share one year before IPO, and zero otherwise.
Coastal cities	A dummy variable takes a value of one if the IPO firm is located in open coastal cities, and zero otherwise.
Gov. IPOs	A dummy variable takes a value of one if the IPO firm is controlled by the government, and zero otherwise.
CEO ownership	The percentage of shares held directly and indirectly (through family members and controlling firms) by the CEO of an issuing firm.
VC ownership	The percentage of shares held by the lead VC.
VC age	The logarithm of one plus VC age, which is measured as the number of years between the establishment date of a VC firm and the IPO date of its backed firm.
Syndicate size	The number of VC syndicate members invested in an IPO issuer.
VC duration	A dummy variable takes a value of one if the investment duration of a VC firm in its backed firm is longer than two years, and zero otherwise.
Board	A dummy variable takes a value of one if the IPO is listed on the venture board, and zero otherwise